

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 1 329 356 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
23.07.2003 Bulletin 2003/30

(51) Int Cl.7: **B60N 2/58**, B60N 2/70,
B62J 1/18, B62J 1/22

(21) Application number: 03001130.8

(22) Date of filing: 20.01.2003

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IT LI LU MC NL PT SE SI SK TR
Designated Extension States:
AL LT LV MK RO

(71) Applicant: **Selmat Automotive S.p.A.**
10090 Cascine Vica - Rivoli (IT)

(72) Inventor: **Maccherrone, Michele c/o Sisoldo**
10123 Torino (IT)

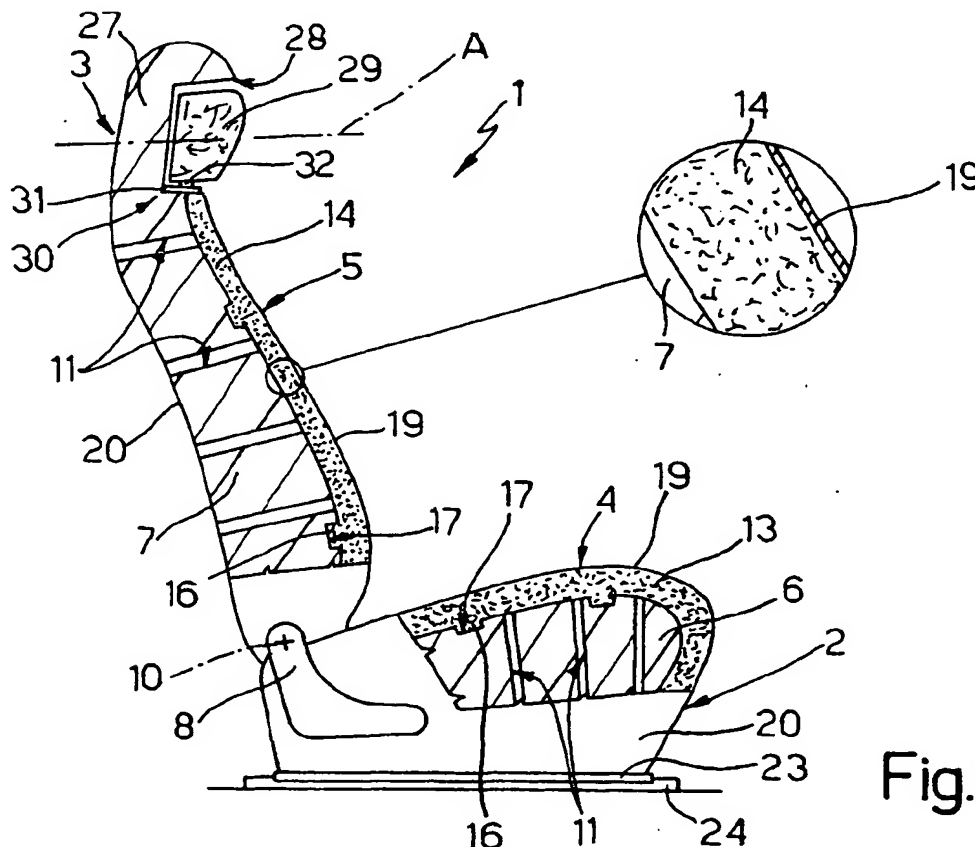
(30) Priority: 22.01.2002 IT TO20020062

(74) Representative: **Cerbaro, Elena et al**
c/o Studio Torta S.r.l. Via Viotti, 9
10121 Torino (IT)

(54) Vehicle seat supporting member

(57) A supporting member (2, 3; 52) for a vehicle seat (1; 52); the supporting member defines a seat portion or a backrest of the seat (1; 52), and has a user supporting surface (4; 5), a cushioned body (13; 14) as-

sociated with the supporting surface (4; 5), and a frame (6; 7; 7a, 7b, 46) for supporting the cushioned body (13; 14) and defined by a supporting body (6; 7; 7a, 7b) made of self-supporting foam material.

**Fig.1****EP 1 329 356 A2**

Description

[0001] The present invention relates to a supporting member, in particular a vehicle seat supporting member, to which the following description refers purely by way of example.

[0002] As is known, a vehicle seat is defined by a seat portion and a backrest, each of which comprises a relatively soft or cushioned body made, in particular, of polyurethane; and a metal frame supporting the cushioned body.

[0003] The frame and cushioned body are at least partly covered with sheet material, e.g. imitation leather or fabric, to enhance the appearance of the seat and define a user supporting surface.

[0004] Though widely used, known seats of the type described above are unsatisfactory, on account of the relatively heavy weight of the metal frame, and the cushioned body material being inflammable and used in large amounts to obtain a comfortable thickness of about 150 millimeters, so that known seats do not always conform with increasingly strict automotive safety regulations.

[0005] It is an object of the present invention to provide a vehicle seat supporting member designed to provide a straightforward, low-cost solution to the above drawbacks, while at the same time ensuring a good degree of comfort.

[0006] According to the present invention, there is provided a supporting member for a vehicle seat; the supporting member comprising a user supporting surface, a cushioned body associated with said supporting surface, and a frame for supporting said cushioned body; and being characterized in that said frame comprises a supporting body made of self-supporting foam material.

[0007] A non-limiting embodiment of the invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a schematic, partly sectioned side view of a preferred embodiment of two vehicle seat supporting members in accordance with the present invention;

Figure 2 shows a schematic, partly sectioned front view of the Figure 1 supporting members;

Figure 3 shows a schematic, smaller-scale, exploded view in perspective of a variation of the Figure 1 and 2 supporting members;

Figures 4 to 6 are similar to Figure 1, and show, with parts removed for clarity, further variations of the Figure 1 and 2 supporting members;

Figure 7 is similar to Figure 1, and shows a further preferred embodiment of a supporting member in accordance with the present invention.

[0008] Number 1 in Figure 1 indicates a vehicle seat comprising two distinct supporting members, the term

"supporting member" meaning a member defining a seat portion or a backrest for vehicle user support. The supporting members of seat 1 define a seat portion 2 and a backrest 3, which have respective user support surfaces 4, 5, and in turn comprise respective bodies 6, 7 made of self-supporting foam material, preferably polypropylene foam or a foam material known by the trade name "Noril" (registered trademark). Bodies 6, 7 are steam molded in respective molds from foaming beads and under such pressure as to obtain bodies 6, 7 of a given density - in particular, at least 30 kg/m³, and preferably ranging between 40 and 80 kg/m³- and sufficient rigidity to provide support. In variations not shown, bodies 6, 7 are formed with holder compartments, and/or with inner weight-reducing pockets, and/or with reinforcing inserts embedded in areas subjected to most stress or weight.

[0009] Bodies 6, 7 preferably range in thickness from 100 to 150 millimeters (measured perpendicular to surfaces 4, 5), and are connected to each other by a known hinge device 8 (not described in detail) by which backrest 3 rotates with respect to seat portion 2 about a horizontal axis 10.

[0010] With reference to Figures 1 and 2, bodies 6, 7 comprise a number of inner channels 11 extending crosswise to surfaces 4, 5 to permit air flow and transpiration of the user-contact areas of surfaces 4, 5. More specifically, channels 11 communicate, in known manner not shown, with the vehicle ventilation and air-conditioning system to thermally regulate seat 1.

[0011] With reference to Figures 1 and 2, seat portion 2 and backrest 3 comprise respective cushioned bodies 13, 14, which are preferably made of flexible polyurethane foam to soften support on associated surface 4, 5, are superimposed on respective bodies 6, 7, preferably range in thickness from 20 to 30 millimeters (measured perpendicular to surfaces 4, 5), and comprise a number of projections 16 engaging respective retaining seats 17 formed in bodies 6, 7. More specifically, bodies 13, 14 are preformed and glued integrally to bodies 6, 7, or are co-molded onto bodies 6, 7.

[0012] To enhance the appearance of seat 1, bodies 13, 14 are upholstered, in known manner not described in detail, with a finish cover sheet 19, e.g. of fabric or imitation leather, defining surfaces 4, 5; and bodies 6, 7 are also upholstered laterally with finish sheet material 20, e.g. imitation leather or a thermoplastic material known by the trade name "Cartar" (registered trademark).

[0013] Seat portion 2 defines a cavity 21 formed in body 6 to house a motor reducer 22 (shown schematically) for adjusting the position of seat 1 in the passenger compartment of the vehicle, and is fitted with two slides 23 (shown schematically) fitted integrally to the base of body 6, i.e. on the opposite side to body 13, to engage respective longitudinal rails 24 on the vehicle.

[0014] Backrest 3 comprises a top portion 27, which defines a front seat 28 housing a headrest 29, and is

be made of materials other than those indicated by way of example.

Claims

1. A supporting member (2, 3; 52) for a vehicle seat (1; 52); the supporting member comprising a user supporting surface (4; 5), a cushioned body (13; 14) associated with said supporting surface (4; 5), and a frame (6; 7; 7a, 7b, 46) for supporting said cushioned body (13; 14); and being **characterized in that** said frame (6; 7; 7a, 7b, 46) comprises a supporting body (6; 7; 7a, 7b) made of self-supporting foam material.
2. A member as claimed in Claim 1, **characterized in that** said self-supporting foam material is polypropylene foam.
3. A member as claimed in Claim 1, **characterized in that** said self-supporting foam material is a material known by the trade name "Noril".
4. A member as claimed in any one of the foregoing Claims, **characterized by** comprising reinforcing means (46) embedded in said supporting body (6; 7; 7a, 7b).
5. A member as claimed in Claim 4, **characterized in that** said supporting body (7) is formed in two parts (7a, 7b) connected integrally to each other; said reinforcing means comprising a layer of fiber material (46) interposed between said two parts (7a, 7b).
6. A member as claimed in Claim 5, **characterized in that** said layer of fiber material (46) extends along a surface substantially parallel to, and at a distance from, said supporting surface (5).
7. A member as claimed in any one of the foregoing Claims, **characterized in that** said cushioned body (13; 14) is superimposed on said supporting body (6; 7), and comprises a number of projecting portions (16) engaging respective retaining seats (17) formed in said supporting body (6; 7).
8. A member as claimed in any one of the foregoing Claims, **characterized in that** said cushioned body (13) is detached from said supporting body (6); suspension means (48, 49) being interposed between said cushioned body (13) and said supporting body (6) to enable said cushioned body (13) to move to and from said supporting body (6).
9. A member as claimed in Claim 8, **characterized in that** said suspension means (48, 49) comprise a flexible plate (48) integral with said cushioned body

(13) and facing said supporting body (6); and a number of elastic elements (49) interposed between said plate (48) and said supporting body (6).

- 5 10. A member as claimed in any one of the foregoing Claims, **characterized in that** said supporting body (6; 7) defines at least one cavity (21; 41) for housing at least one of an airbag and an actuating device.
- 10 11. A member as claimed in any one of the foregoing Claims, **characterized in that** said supporting body (6; 7) comprises a number of channels (11) permitting air flow to said supporting surface (4; 5).
- 15 12. A member as claimed in any one of the foregoing Claims, **characterized by** comprising first hinge connecting means (34) carried by said supporting body (6) and connectable to second hinge connecting means (35) of a further supporting member to permit rotation of said supporting members (2, 3) with respect to each other.
- 20 13. A member as claimed in Claim 12, **characterized in that** said first hinge connecting means (34) comprise at least one end portion (34) of said supporting body (6); and **in that** said second hinge connecting means (35) comprise a seat (36) housing said end portion (34); a hinge pin (37) being provided to hinge said end portion (34) inside said seat (36).
- 25 14. A member as claimed in any one of the foregoing Claims, **characterized by** forming part of a backrest (3).
- 30 15. A member as claimed in Claim 14, **characterized by** comprising guide means (30; 42) for a headrest (29; 44) carried by said supporting body (7).
- 35 16. A member as claimed in Claim 15, **characterized in that** said guide means (42) comprise two guide seats (42) formed directly inside said supporting body (7) and engaged in sliding manner by respective rods (43) supporting the headrest (44).
- 40 17. A member as claimed in any one of Claims 1 to 13, **characterized by** forming part of a seat portion (2) of said seat (1).
- 45 18. A member as claimed in any one of Claims 1 to 13, **characterized by** defining a motorcycle saddle (52).
- 50
- 55

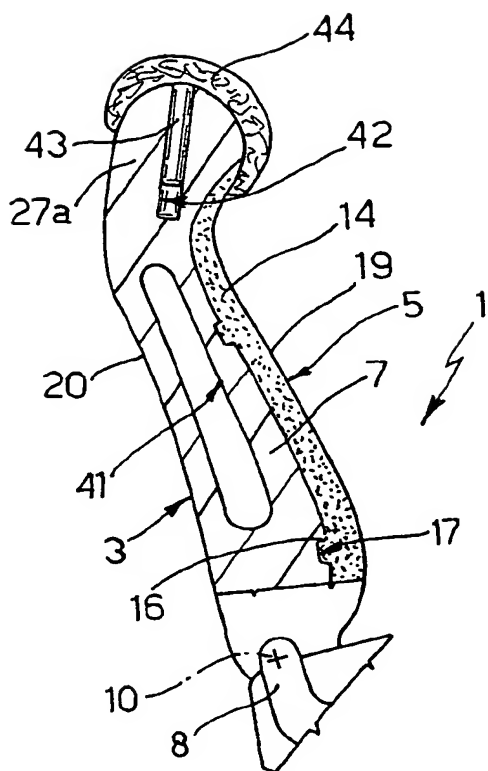


Fig. 4

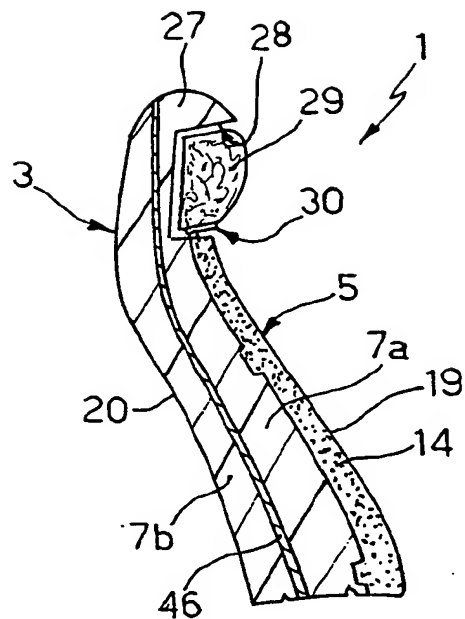


Fig. 5

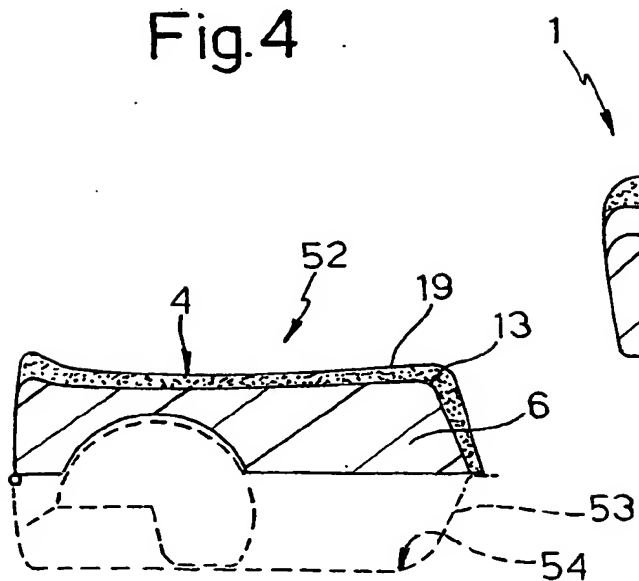


Fig. 7

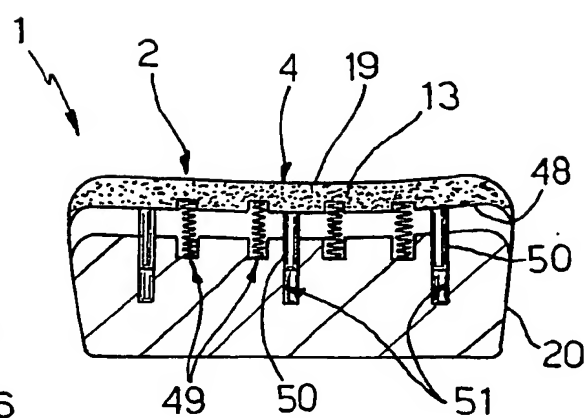


Fig. 6

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 329 356 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
28.07.2004 Bulletin 2004/31

(43) Date of publication A2:
23.07.2003 Bulletin 2003/30

(21) Application number: 03001130.8

(22) Date of filing: 20.01.2003

(51) Int Cl.7: **B60N 2/58, B60N 2/70, B62J 1/18, B62J 1/22, B60N 2/68, B60N 2/54, B60N 2/56, B60N 2/48, A47C 7/18, A47C 7/34**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT SE SI SK TR
Designated Extension States:
AL LT LV MK RO

(30) Priority: 22.01.2002 IT TO20020062

(71) Applicant: **Selmat Automotive S.p.A.**
10090 Cascine Vica - Rivoli (IT)

(72) Inventor: **Maccherrone, Michele c/o Sisoldo**
10123 Torino (IT)

(74) Representative: **Cerbaro, Elena et al**
c/o Studio Torta S.r.l. Via Viotti, 9
10121 Torino (IT)

(54) Vehicle seat supporting member

(57) A supporting member (2, 3; 52) for a vehicle seat (1; 52); the supporting member defines a seat portion or a backrest of the seat (1; 52), and has a user supporting surface (4; 5), a cushioned body (13; 14) as-

sociated with the supporting surface (4; 5), and a frame (6; 7; 7a, 7b, 46) for supporting the cushioned body (13; 14) and defined by a supporting body (6; 7; 7a, 7b) made of self-supporting foam material.

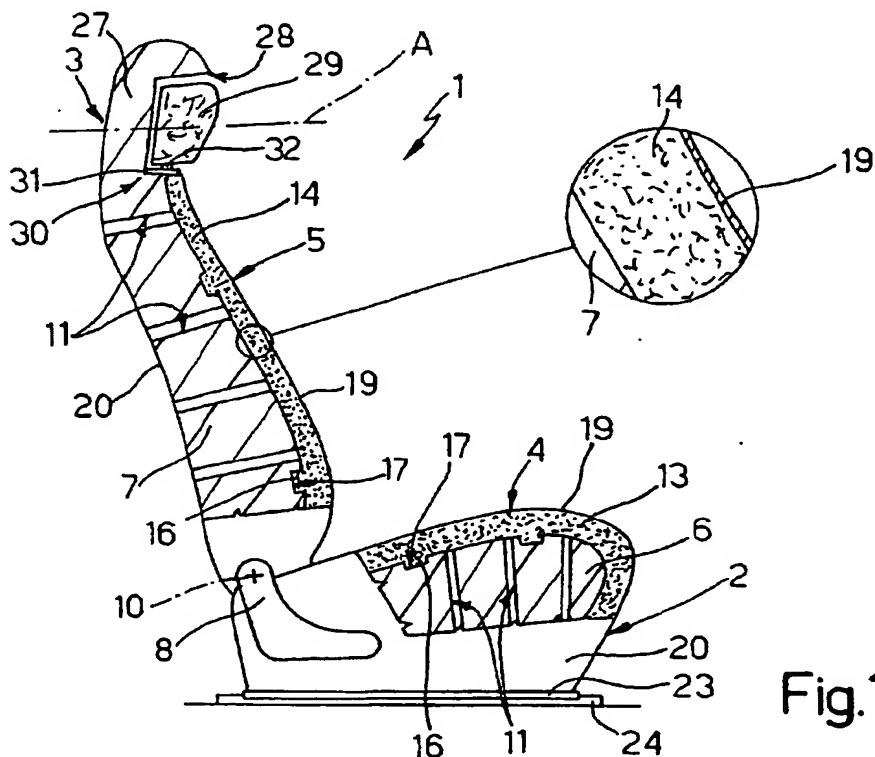


Fig.1

EP 1 329 356 A3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 00 1130

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X A	EP 1 106 424 A (BRIDGESTONE CORP) 13 June 2001 (2001-06-13) * the whole document *	1-7,10, 14-18 8,9,11, 13	B60N2/58 B60N2/70 B62J1/18 B62J1/22 B60N2/68
X A	US 5 882 073 A (HILL KEITH ET AL) 16 March 1999 (1999-03-16) * column 1, line 57 - column 10, line 27; figure 1 *	1-7,10, 14-18 8,9, 11-13	B60N2/54 B60N2/56 B60N2/48 A47C7/18 A47C7/34
X A	US 5 176 860 A (STORCH HELMUT) 5 January 1993 (1993-01-05) * column 3, line 61 - column 6, line 14; claim 1; figures 4,8 *	1-7,10, 14-18 8,9, 11-13	
X	US 5 954 403 A (MOECK CHRISTOF ET AL) 21 September 1999 (1999-09-21) * the whole document *	1-4,10, 14-18	
X	US 3 758 159 A (MORRIS A) 11 September 1973 (1973-09-11) * column 1, line 63 - column 2, line 40; claim 1; figure 2 *	1-6,10, 14-18	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
X	US 5 544 942 A (SABIN MICHEL ET AL) 13 August 1996 (1996-08-13) * column 3, line 28 - column 7, line 28; claim 1; figures 2-8 *	1-4,10, 11,14-18	B60N A47C
X	PATENT ABSTRACTS OF JAPAN vol. 014, no. 147 (M-0952), 20 March 1990 (1990-03-20) -& JP 02 011482 A (TOKYO SEAT KK), 16 January 1990 (1990-01-16) * abstract *	1-3,11, 18	
A	US 1 706 585 A (PARKER ARVEL W) 26 March 1929 (1929-03-26)		
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 8 April 2004	Examiner Lotz, K-D
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

EPO FORM 1503 (03.02.02) (P04C01)

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.